

Date: Thursday, 04/12/2008 11:52:39 AM
 User: Chantal Lavoie

Process Sheet

Customer : CU-DAR001 Dart Helicopters Services	Drawing Name : ROUND BILLET 17-4
Job Number : 43919	
Estimate Number : 10039	
P.O. Number :	Part Number : D6104003
This Issue : 04/12/2008 S.O. No. :	Drawing Number : D6104 REV B
Prsht Rev. : NC	Project Number : N/A
First Issue : / / Type : MACHINED PARTS	Drawing Revision : B
Previous Run : 42436	Material :
Written By :	Due Date : 23/12/2008 Qty: 40 Um: Each
Checked & Approved By :	
Comment : Est. B: 01.09.04 Revised Step 2 SM	

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description :
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1.0	PG	PURCHASING
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Comment: PURCHASING

Issue P/O: 7758

a) Description: S.S round billet

b) Ø3.25" x 3.80" long

c) Tolerance on all dimensions are +0.030"/-0.000"

d) Material: 17-4PH Stainless steel (Ams 5643 or Aisi 630)

e) One blank makes 2 parts

f) Material certification required

C208112104

(40)

2.0	D6104003P	17-4 SS Roundbar 3.25"OD
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Comment: Qty.: 1.0000 Each(s)/Unit Total: 40.0000 Each(s)
 17-4 SS Roundbar 3.25"OD

3.0	PACKAGING 1	PACKAGING RESOURCE #1
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Comment: PACKAGING RESOURCE #1

Receive & Inspect For Transit Damage

Ensure material certification is attached

C208112104 40

4.0	QC6	DIMENSIONAL CHECK
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Comment: DIMENSIONAL CHECK

Ensure Material certification comply to Dwg D6104

SD 08/12/17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Thursday, 04/12/2008 11:52:39 AM
User: Chantal Lavoie

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: ROUND BILLET 17-4

Job Number: 43919

Part Number: D6104003

Job Number:



Seq. #:

Machine Or Operation:

Description :

5.0

PACKAGING 1

PACKAGING RESOURCE #1



Comment: PACKAGING RESOURCE #1

Identify and Stock

Location: _____

SS 12/12

6.0

QC21

FINAL INSPECTION/W/O RELEASE



08/12/17

Comment: FINAL INSPECTION/W/O RELEASE

Job Completion



mf 08-12-17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

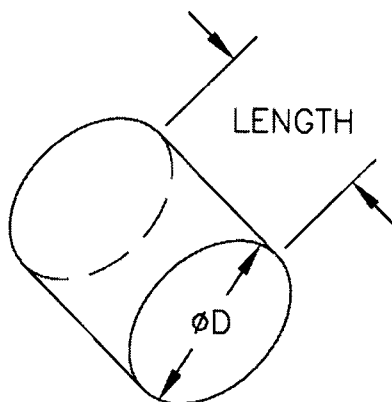


DESIGN RT	DRAWN BY 	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED 	APPROVED 	DRAWING NO. D6104	Rev. B SHEET 1 OF 1
DATE 02.11.25		TITLE ROUND BILLET, 17-4	SCALE NTS
A	01.04.10	NEW ISSUE	
B	02.11.25	CLARIFY ALLOY SPEC ADDED D6104-009/-011 REDUCE LENGTH OF BILLETS	

RELEASED

02.11.29

SPECIFICATION CONTROL DRAWING



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 43919

MATERIAL: 17-4 PH SS (AMS 5643 OR AISI 630) MIN UTS = 170 KSI (38 HRc)

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, DIAMETER x LENGTH (+0.030/-0.000) AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.030/-0.000.

ALL DIMENSIONS ARE IN INCHES

Part No.	Alloy	D (Diameter)	Length
D6104-001	17-4 PH STAINLESS STEEL	Ø3.00	3.80
D6104-003	17-4 PH STAINLESS STEEL	Ø3.25	3.80
D6104-005	17-4 PH STAINLESS STEEL	Ø4.00	5.10
D6104-007	17-4 PH STAINLESS STEEL	Ø4.50	5.10
D6104-009	17-4 PH STAINLESS STEEL	Ø5.25	4.10
D6104-011	17-4 PH STAINLESS STEEL	Ø6.50	4.10

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12 1W



CERTIFICATION

A.M. CASTLE & Co. (Canada) Inc.

DATE CHARGED-LOADED

NO. COM.-ORD. NO.

POIDS TOTAL JOURNÉE-TOT. DLY

SHIPPED DEC 15 2008

574750

TOMER REQUISITION NO.

NO. COM. CLIENT-CUST. ORD. NO.

COMPTÉ-ACCT.

VEND. SLS

TERR.

EXPÉDIE PAR-SHIP VIA

7758

71037

200

50

MANITOULIN

ENT

TELEPHONE

613 632-3336

H/C

TAXE

NO. COM. ORD.

1

REGION LIVRAISON-DEL ZONE

F.A.B.-F.O.B.

PREPAID

BILL

NO. FEVILLE/EMBALLAGE-B/L NUMBER

VENDU A-SOLD TO:

DART AEROSPACE LTD

1270 ABERDEEN

HAWKESBURY

ON K6A 1K7

INFORMATION CRÉDIT-CREDIT INFORMATION

ROUTE

10-NL-12/1

30-NL-12/1

31-NL-12/1

DELIVERY

INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)

INSTRUCTIONS LIVRAISON (CONT.)-DELIVERY (CONT'D.)

R-4NI RT SOL. TREATED COND A 3.80"

GOLD

QTE/UNITE COM.-ORDERED

40 PCS

POIDS COM.-WT. ORDERED

358

BALLOTS-BUNDLES

PCS/PD EXP. SHIP

POIDS EXP.-WT. SHIPPED

1

40

358

OF CONFORMANCE

INSTRUCTIONS

TOL + 1/8" - 0

PRIOR DIST/ORD: 10 553412

COULÉE INFO-HEAT INFO

QTE-QTY

245504

245747

A 10236

38 PCS

A 18939

2 PCS

GOLD -

INSTRUCTIONS (CONT'D.)

40x3.80"

FORME-SHAPE

I.A.C.

42470

ING PURPOSES ONLY. SEE
ATE BILLING WEIGHT. PLEASE
ER'S COPY FOR RECEIPT OF
CKED, TEST REPORTS.



ENT-WH

**ID CONDITIONS
F SALE**

**ERS AND LIMITATIONS
REVERSE SIDE**

INSTRUCTIONS

1 Box

COULÉE INFO-HEAT INFO

QTE-QTY

INSTRUCTIONS (CONT'D.)

QTE/UNITE COM.-ORDERED

POIDS COM.-WT. ORDERED

BALLOTS-BUNDLES

PCS/PD EXP. SHIP

POIDS EXP.-WT. SHIPPED

FORME-SHAPE

I.A.C.

ENT-WH

ORTAGE OR DAMAGE MUST BE NOTED
CUSTOMER COPY OF THE DELIVERY
THE DRIVER & CUSTOMER. COPY OF
Y NOTED MUST BE SUBMITTED WITHIN
REQUESTED.

INSTRUCTIONS

COULÉE INFO-HEAT INFO

QTE-QTY

INSTRUCTIONS (CONT'D.)

QTE/UNITE COM.-ORDERED

POIDS COM.-WT. ORDERED

BALLOTS-BUNDLES

PCS/PD EXP. SHIP

POIDS EXP.-WT. SHIPPED

FORME-SHAPE

I.A.C.

ENT-WH

E (PRINT ONLY)

DATE RECU-
DATE RECEIVED



PO BOX 977
SYRACUSE, NY 13201-0977

Certificate of Test

S O L D T O
A M CASTLE, INC
3400 N WOLF RD
FRANKLIN PARK, IL 60131

S H I P T O
A M CASTLE, INC
26800 MILES RD
BEDFORD HEIGHTS, OH 44146

OUR ORDER NO.
P5-16007-8-01

DATE
10/10/08

CUSTOMER ORDER NO
10-40881

CUSTOMER REQ NO

DISTRICT
B PARSONS

SHIPPED FROM
SYRACUSE

DESCRIPTION OF MATERIAL

CRU 17-4PH RT A IAC 42470
AMC-3174-10 REV 8 ASME-SA564-07ED T630 ASTM-A564-04 T630
AMS-5643R (EX SURFACE) AISI 630 UNS# S17400
DFARS 252.225-7014 ALT 1

SIZE
3.250 RD

HEAT NO.

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	CB	TA
A10236	.036	.66	.031	.016	.52	4.17	15.11	.15	3.06	.28	.013

QUANTITY HEAT NO.

MECHANICAL PROPERTIES

1430 # A10236 TENSILE PSI YLD.2%PSI %ELONG4D RED/AREA% HARDNESS
BHN 342
CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL:
203,240 179,390 12.3 48.4 BHN 415

MACRO TEST OK

FERRITE 3 %

MAGNAFLUX F/S = 0/0

ELECTRIC FURNACE AOD MELTED

REDUCTION RATIO: 27.5:1

MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -
AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #18610.

MATERIAL INGOT CAST.

NAFTA - YES

CASTLE METALS CORP.
DATE RCVD 11/10/08
IAC 42470
APPROVED BY [Signature]

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT, NO WELD REPAIR PERFORMED, AND MATERIAL MELTED IN U.S.A

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED ACCORDANCE WITH ABOVE
SPECIFICATIONS AND IS IN CONFORMANCE WITH THE SPECIFICATION REQUIREMENTS.
CRUCIBLE MATERIALS CORPORATION ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

CERTIFIED BY

JON PIKARSKY - QUALITY ASSURANCE REPRESENTATIVE

07-25-'07 07:24 FROM-

T-072 P002/008 F-294



P.O. BOX 977
SYRACUSE
NEW YORK 13201

CERTIFICATE OF TEST

S
O
L
D
T
O

A M CASTLE, INC

3400 N GOLF RD
FRANKLIN PARK, IL 60131

S
H
I
P
T
O

A M CASTLE, INC

26800 MILES RD
BEDFORD HEIGHTS OH 44146

OUR ORDER NO.

PO-11330-7-1

DATE

07/18/07

CUSTOMER ORDER # & DATE

10-31163

CUSTOMER REQ. #

DISTRICT

B PARSONS

SHIPPED FROM

SYRACUSE

DESCRIPTION OF MATERIAL

SIZE

CRU 17-4PH RT A IAC 42470 3.250 RD
AMC-3174-10 REV 7 ASME-SA564-04ED T630 ASTM-A564-04 T630
AMS-56430 AISI 630 UNS-S17400

HEAT NO.

CHEMICAL ANALYSIS

HEAT NO.	C	MN	P	S	SI	NI	CR	MO	CU	CB	TA
A18939	.037	.42	.027	.022	.63	4.09	15.28	.11	3.22	.29	.012

CASTLE METALS CORP.

DATE RCVD 7/25/02

IAC 42470

APPROVED BY *[Signature]*

QUANTITY

HEAT NO.

MECHANICAL PROPERTIES

1314 # A18939 TENSILE PSI YLD.25%PSI %ELONG40 RED/AREAX HARDNESS
BHN 356
CAPABILITY PHYSICALS AFTER 900 DEG. F. - 1 HR. AIRCOOL: RC 35
203,000 174,050 12.3 51.1 BHN 415

MACRO TEST OK
FERRITE 5 %
MAGNAFLUX F/S = 0/0

REDUCTION RATIO: 27.5:1
MATERIAL SOLUTION TREATED AT 1900 DEG. F. HELD 45 MINUTES AT TEMPERATURE -
AIRCOOLED.

CRUCIBLE MATERIALS CORP. VENDOR #15610.
MATERIAL INGT CAST.
NAPTA - YES

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT
NO WELD REPAIR PERFORMED
MATERIAL MELTED IN U.S.A.

THANK YOU FOR SELECTING A QUALITY PRODUCT
MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS

SWORN TO AND SUBSCRIBED BEFORE ME THIS

DAY OF . 20

NOTARY PUBLIC

CERTIFIED BY:

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

QUALITY ASSURANCE REPRESENTATIVE

